IN THE CLAIMS

Cancel claims 1-15 and substitute new claims 16-31.

16. (New) A process for production of an artificial tooth substitute to be fitted on a prepared dental stump comprising the steps of:

scanning and digitizing a three-dimensional outer and inner surface of a positive model of a skeletal structure for the artificial tooth substitute to obtain data;

determining an enlargement factor (f) for the obtained data in accordance with the following

$$f = \sqrt[3]{\frac{P_S}{P_R}}$$

where P_R is the relative density of a preprepared blank and P_S is the achievable relative density after sintering;

enlarging the obtained data linearly in all direction by the enlargement factor (f) thereby compensating precisely for sinter shrinkage to obtain modified data for an enlarged model;

transferring the modified data to a control unit of a processing machine;

processing a blank of porous ceramic material in the processing machine and removing material therefrom to produce a design form of the enlarged model;

dense-sintering the design form of porous ceramic material to obtain a skeletal structure having precise end dimensions; and

facing the skeletal structure as desired to form the artificial tooth substitute.

17. (New) A process according to claim 16, wherein the artificial tooth substitute is formed with fine run-out margins.

18. (New) A process according to claim 16, wherein the machined enlarged model is sintered to a density P_S of 90 to 100% of the theoretically possible density.

19. (New) A process according to claim 16, wherein the machined enlarged model is sintered to a density P_S of 96 to 100% of the theoretically possible density.

20. (New) A process according to claim 16, wherein the machined enlarged model is sintered to a density P_S of greater than 99% of the theoretically possible density.

21. (New) A process according to claim 16, wherein the blank is a presintered blank of pressed fine ceramic

powder.

22. (New) A process according to claim 16, including processing the blank in a first rough machining and then a second final machining.

23. (New) A process according to claim 16, wherein the blank is heat treated at temperatures in the range from 50 to 200°C for a duration of 2 to 20 hours.

24. (New) A process according to claim 16, wherein the blank is heat treated at temperatures in the range from 90 to 150°C for a duration of 2 to 6 hours.

25. (New) A process according to claim 23, wherein processing of the blank into the enlarged model follows the heat treatment.

26. (New) A process according to claim 24, wherein processing of the blank into the enlarged model follows the heat treatment.

27. (New) A process according to claim 21, wherein the presintered blank undergoes presintering for 0.5 to 6 hours

at a temperature of at least 450°C.

28. (New) A process according to claim 16, wherein the blank is formed of a material selected from the group consisting of Al_2O_3, TiO_2, MgO, Y_2O_3, zircon oxide mixed crystal $Zr_{1-x}Me_xO_2-(\underline{4n}\ _2)_x$, and mixture thereof, where Me is a metal which is present in the oxide form as a bi-, tri-, or tetravalant cation (n = 2, 3, 4 and $0 \leq x \leq 1$) and stabilises the tetragonal and/or cubic phase of the zircon oxide.

29. (New) A process according to claim 28, wherein the material is mixed with an organic bonding agent selected from the group consisting of polyvinyl alcohols (PVA), polyacrylic acids (PAA), celluloses, polyethyleneglucols, thermoplastics and mixtures thereof.

30. (New) A process according to claim 29, wherein the proportion of binding agent lies in the range from 0.1 to 45 vol%.

31. (New) A process according to claim 29, wherein the proportion of binding agent lies in the range from 0.1 to 5 vol%.